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The prevalence of hypertension and its modifiable risk factors among medical students of a medical college in Uttar Pradesh, India

Singh AP

Department of Community Medicine, Lumbini Medical College and Teaching Hospital, Pravas, Palpa, Nepal

Corresponding author Dr. A.P. Singh, M.D. Associate Professor, Department of Community Medicine, Lumbini Medical College and Teaching Hospital, Pravas, Palpa, Nepal

ABSTRACT

Hypertension and associated diseases are currently responsible for large number of deaths in India, and constitute up to 60% of the patients admitted into the medical wards of most tertiary hospitals in India. This study was conducted to find out the prevalence of hypertension and its modifiable risk factors among the medical students of a medical college in India. **Materials and Methods:** A descriptive cross-sectional study design was used, with the data collected using a modified form of the WHO STEPS instrument that consists of a questionnaire component and the measurement of body mass index (BMI) and blood pressure. Study period March-April, 2009. The questionnaire was used to collect information on the socio-demographic characteristics of the respondents, the use of tobacco, the consumption of alcohol, the type of diet, and the amount and types of physical activities undertaken. **Results**: A total of 75 students participated fully in the study, out of an eligible total of 100. They were mostly males (65.33%), unmarried and had an average age of 18.06 ± 2.62 years. The prevalence of hypertension was 21.33%; out of which 12 (75.00%) were already aware of their status, and were on appropriate therapy. Only 13 (17.33%) of the students were of normal weight, 45 (60.00%) were overweight, while 17 (22.67%) were obese. Only 2 (2.67%) currently smoke, while most (94.67%) drank less than three standard units of alcohol in a day, mainly in social occasions. **Conclusion:** The prevalence of hypertension among the medical students in the medical school was lower than that in the general population, mainly due to their better health-seeking behavior and healthy lifestyle.

Key words: Hypertension, medical students.

INTRODUCTION

More than 30 years ago, Omran had in a series of articles proposed the epidemiological transition theory.[1] In this theory, he predicted the displacement of infectious diseases by non communicable diseases, as major causes of morbidity and mortality, as a community or country develops. In spite of these increases, the treatment outcomes for the non communicable diseases, in even the best tertiary hospitals in India, have remained very poor. The poor treatment outcome for non communicable diseases is however recognized globally, and has prompted the WHO to propose a paradigm shift in health care delivery, in favor of preventive and more proactive healthcare, through its innovative care for chronic condition (ICCC) framework.[2,3,4] This framework called for the education of patients and other members of the community, especially as the risk factors of the non communicable diseases are often lifestyle related. Patient education by physicians and other members of the health team form an important part of this WHO recommendation. For example, the brief advice and counseling delivered by a physician or nurse practitioner, as part of routine primary care, can significantly reduce the amount of alcohol consumed by high-risk drinkers.[5]The effectiveness of patient education efforts can however be adversely affected by the lifestyle of the attending physician.[6,8] Studies in the United States indicate that doctors who have healthy personal habits are more likely to discuss related preventive health behaviors with their patients;[6,8] while patients are more likely to believe and be motivated by the message given by a physician, if the physician discloses his/her own personal health habits.[7] This study was conducted to determine the prevalence of hypertension and its modifiable risk factors among the students of the SRMS Medical College, Uttar Pradesh.

Students in a medical school were chosen for this study not only because they are the leaders of the health team in their respective specialties, but also because they are the teachers of the next generation of medical doctors. A study had found that the emphasis placed during medical education often influence the lifestyle and future practice of a doctor.[6,8] The findings of this study would therefore not only provide information on the effectiveness of the current management of chronic diseases in India, but can also assist in predicting the vigor with which future control efforts would be carried out.

MATERIALS AND METHODS

A descriptive cross-sectional study design was used, while the medical students were used as the study population. The study was designed to detect a 5% difference in prevalence of hypertension, with an alpha error of 5%, acceptable beta error of 20%, and a statistical power of 80%; while the estimated prevalence of hypertension in the study population was put at 27.9%.[3] Using the usual formula for sample size determination for studying proportions in populations of less than 10,000, the minimum required sample size was determined to be 75.

The subjects for the study were randomly chosen from a list of 100 students, obtained from the medical college, while the data were collected using a modified form of the WHO STEPS instrument for chronic disease risk factor surveillance, that consist of a questionnaire component and physical measurement.[9] The questionnaire was structured, self-administered, and used to collect information on the socio-demographic characteristics of the respondents, the use of tobacco, the consumption of alcohol, the type of diet, the amount and types of physical activities undertaken by the respondents, and the history of raised blood pressure. The physical measurements include the measurement of weight, height, and blood pressure. Weight was measure to the nearest 0.1 kg, using a portable weighing scale, while height was measured to the nearest 0.5 cm, using a stadiometer. The body mass index (BMI) for each of the subjects was then calculated from weight (in kilogram), divided by a square of the height (in meter); and classified as obese when the BMI was greater or equal to 30, overweight when the BMI was between 25.0 and 29.9, normal weight when the BMI was between 18.5 and 24.9, and underweight when the BMI was less than 18.5. The blood pressure was measured in the sitting position, using a mercury sphygnomanometer with the appropriate size of cuff; and standard measures were taken to ensure accuracy. The systolic blood pressure was recorded at phase I Korotkoff sound, while the diastolic blood pressure was recorded at phase V Korotkoff sound. Three consecutive measurements were taken at an interval of at least three minutes, but only the second and third measurements were used in calculating the mean systolic and diastolic blood pressures that serve as the blood pressure of the subject. The subjects were said to be hypertensive according to the WHO/ ISH criteria, when their mean systolic blood pressure were greater than or equal to 140 mmHg, and/or when their mean diastolic blood pressure was greater or equal to 90 mmHg.

RESULTS

A total of 100 students were approached for the study, but only 75 responded to the questionnaire, and also made themselves available for the physical measurements. This gives a response rate of 75.00% of the 75 students that were studied, 26 (34.67%) were female, while 49 (65.33%) were male, and had an average age of 18.06 ± 2.62 years. All students were unmarried. The prevalence of hypertension among the students was 21.33%, as a total of 16 of them, 12 males (75.00%), 4 females (25.00%) were found to be hypertensive. Out of the 16 students that were found to be hypertensive, 12 (75.00%) were already aware of their status, and were already on drug therapy and reduced salt intake. Four (25.00%) of the hypertensive students were also diabetic, and were on prescribed diet. Only 13 (17.33%) of the students were of normal weight, 45 (60.00%) were overweight, 17 (22.67%) were obese, while none was underweight. The students ate an average of 6.34 ± 2.15 meals per week that were prepared outside their home; all of them went to college by walking, while 51 (68.00%) regularly engage in some form of physical exercises, like jogging, brisk walking and aerobics. Some 11 (14.67%) of the students had previously smoked cigarette, but only 2 (2.67%) still smoke an average of six sticks of cigarette daily, mainly outside the hospital, and at hostel. All the students had taken an alcoholic drink within the preceding 12 months, mainly in social occasions (92.00%), and less than three standard units (94.67%). Most 40 (53.33%) of the students took an alcoholic drink monthly, 21 (28.00%) 2-3 times in a month, 11 (14.67%) drank alcohol weekly, while 3 (4.00%) took alcohol every day.

DISCUSSION

The subjects of our study had an average age of 18.06 ± 2.62 years, and a prevalence of hypertension of 21.33%. This is much lower than the prevalence in the general population

in the urban centers. The lower prevalence of hypertension recorded in our study might be due to the better health-seeking behavior of the medical students especially as 75% of those that were found to be hypertensive were already aware of their condition, and had taken concrete steps to control the hypertension. Also, the fact that only 2.67% of the students were smokers, coupled with the finding that most of them drank less than three standard units of alcohol a day, might also be responsible for the lower prevalence of hypertension among the students. The use of alcohol and the smoking of cigarette by the students was much lower than that in the general population. Studies have demonstrated a direct relationship between alcohol intake and the elevation of blood pressure, [10] while cigarette smoking is said to be responsible for at least 12% of all vascular diseases, including hypertension.[2]

The good health-seeking behavior of the subjects of our study and their healthy lifestyle are the essential ingredients required in every doctor, by the WHO's Innovative Care for Chronic Condition (ICCC) framework.[4] for the successful management of hypertension and other non-communicable diseases. Healthy lifestyle particularly needs to be encouraged among doctors, especially as the prevalence of smoking among medical students is often similar to those of the general population, according to the Global Health Professions Student Survey (GHPSS).[11] It is also necessary to correct the impression in certain quarters that a doctor needs to drink alcohol and/or smoke cigarette to cope with the stress of medical practice.[12] The importance of ensuring that doctors have good health habits is reflected in the number of studies that show a positive relationship between physician's healthy habits and effective management of patients with non communicable diseases.[6,8] The desire to be a good role model for patients and children was one of the main reasons given by several health workers in the United States for quitting smoking.[13] Similar pressures should be exerted on doctors in India, even from medical college to achieve the same effect. Our study also found that more than 80% of the subjects were either overweight or obese. The weight problem of the subjects in our study was in spite of the fact that 68% of them regularly engaged in some form of physical exercise, but it is however not completely unexpected, considering the high socioeconomic status of the subjects, and the fact that they ate on a daily basis, meal that was not prepared at home. Although overweight and obesity are established risk factors for hypertension and other non communicable diseases weight control has been a contentious issue in India and other Asian countries where overweight is still being viewed as sign of affluence, while weight loss is often associated with HIV infection.[2,14] However, the fact that 68% of the subjects in our study exercised regularly shows that they were well aware of their weight problem, and the health risks associated with it, in spite of the conflicting cultural reasons. Studies have shown that there is a positive relationship between education and the body size dissatisfaction that often triggers actions aimed at weight control.[15] This further highlights the need to properly educate the general public to take action against the escalating obesity epidemic, especially as studies done in developed countries have linked weight problems to restricted knowledge, lower valuation of weight control, and cultural standards of physical attractiveness.[16] The importance of education and counseling has also been demonstrated in other aspects of the management of hypertension.

CONCLUSION

The prevalence of hypertension among the medical students in the medical college was lower than that in the general population in the urban centers. This is because of better health-seeking behavior of the students, and their healthy lifestyle.

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